approach

FEBRUARY 1962 THE NAVAL AVIATION SAFETY REVIEW

The SAFETY standdown

WITH the beginning of 1982, the chances are that the majority of squadrons in the Navy and Marine Corps were or will be exposed to a safety standdown/Back-in-the-Saddle program. The safety standdown, like the first rose of spring, is a harbinger of a change of pace – most recently, the change to winter flight operations.

Safety standdowns/Back-in-the-Saddle programs have been with us for a number of years. Although the latter program is associated with gearing up to full flight operations after the December holiday leave period, the safety standdown has no particular time frame. It can be ordered at any time by a squadron CO, CAG, wing commander, or type commander. The primary purpose of a safety standdown is to focus on an awareness of safety, principally aviation, but should include other areas of safety such as on-the-job, driver, recreational, home, fire, and industrial.

At the conclusion of a safety standdown, whether it be a half-day, full-day, or two-day program, the important question is – **how successful was it**? Did it hold the attention of the attendees? Or was the general attitude one of "Why do we have to sit through this again?"; "We've heard all that before"; "Nothing new, same old lectures." If these comments are typical or strike a responsive chord relating to your recent standdown, it could indicate two things. First, there may be a complacent or negative attitude toward safety, or your standdown may need a shot in the arm – **something to rejuvenate interest**!

Have you taken a good look at the results since the last safety standdown? Was there an improvement in squadron readiness? Were there specific items or areas that should have been covered but weren't? How much thought and preparation was given to making the current standdown an improvement over the last one?

A squadron safety standdown provides an opportunity to reevaluate the unit's safety posture. Although the safety officer may be tasked to plan and organize it, it is not a one-man show. Why not give some additional thought on what should be covered? A brainstorming session at an AOM or all-hands meeting ought to produce some interesting ideas or suggestions. Don't overlook inviting an expert in a particular field as a speaker, whether it be water survival, ejection seats, instrument procedures, or any other subject of interest to those attending.

A safety standdown must have something for everyone, be meaningful, and have impact on a personal basis to be effective. The man-hours spent on these evolutions are precious from a readiness standpoint. To make this time productive and accomplish the goals of saving lives and material assets, it is certainly worth the effort to make a standdown one of the top priority events during the year.

The February '81 APPROACH lead article, "Standdowns – Where to Go for Help," provides excellent resource material for a standdown.

approach

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Some of our shipmates are on the ice at this time. The cover by Blake Rader is to let them know that we appreciate what they do!

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Between a rock

and a cold place

By LT Rick Wall
Naval Safety Center

"FLY again? I doubt it."

"Wonder what my wife is doing now? Probably the same thing as me . . . waiting."

"Sure wish it would get light."

During that first night up in the mountains, lying on my back – face and arms burned, unable to move – I found out what a good conversationalist I can be . . . with myself . . . when I have to.

By this time the apparent fact of the crash was too big to rationalize away any more. My first hopes of having fallen out of the aircraft and getting busted up pretty good, began to wane in the first few hours after the helo had not come back for me. From the first, the idea that a copilot could fall out a jettisonable door was hard to buy, but it momentarily explained away a crash I didn't want to face up to. The lack of wreckage around me helped support my first hope a while longer, but as the night wore on and my head began to clear, I realized it was probably not a good idea to keep trying to fool myself. Not that it mattered that much: fall or crash, I was still at the 7,000-foot level of a mountain, on my back, with two broken arms, in the dark. Things *had* to get better . . . I hoped.

The SAR recall beeper went off about 1800. I'd just finished dinner and was lounging around reading the newspaper. A quick call to the ODO confirmed the recall and passed information of a SAR in the mountains. Grabbed a coat, kissed the wife, fired up the car, and roared into the base, anxious to get on with what we did best: rescue people. I'd been doing just that for well over a year now, and the initial surge of adrenaline soon gave way to the normal operations of a SAR mission.

Weather brief . . . not terrific, but then it never is. Yellow sheets . . . look good. Change into flight gear, grab the maps and flight packet, back to the duty desk and talk with the requesting sheriff: "We've got an injured hiker who has at least a broken ankle. He's smack in the middle of the mountains, out of food for a day now, and it would take a ground party 3-4 days to reach him."

Reported weather is broken variable overcast at around 8,000 feet MSL in the area. Official sunset is in 1½ hours, more than enough time to get in and out. With this front coming through it's probably a good idea to go now rather than wait 'til first light tomorrow; fronts have a way of stalling at the mountains for 2-3 days. Since we'll be going deep into the mountains, a deputy sheriff will act as guide. We arranged to pick him up at the local airport in 30 minutes. SAR crew brief, in the back of the helo, lasts about 5 minutes: who, what, where, when, why, how we're going to do it, and what happens if something goes wrong.

Strap in, checklist, start and spin 'em, tower clearance, up we go, stable hover, gauges look good, nose over and point towards the mountains in the distance.

"OK, self, what's our plan of action now that it's starting to get light?"

"Should be warmer now. I'm probably quite hypothermic, but at least I'm here to talk to myself about it!"

"Wonder what's happening back at the base now? Do they know about what's happened?"

"Weather looks worse than when we crashed. Terrific . . ."

Continued

It's incredibly difficult to "inspect yourself for injury" when the front of your helmet is pushed down almost to your Adam's apple and both your arms are broken. I could feel most of my body even though some of the parts didn't work too well. Some time during the night I'd managed to pull my PRC-90 out of my survival vest with my teeth. By deftly torquing the antenna, I'd managed to swing it over in the general direction of my right hand. I now tried to turn it on . . . not really hoping for much success. I wasn't disappointed: the rotary knob, with all its detents, was obviously not made to be used by someone with a broken arm. I got the knob out of OFF, but couldn't get it past there. It slipped through my fingers and slid out of sight.

As it got lighter, my hopes of seeing or hearing from another survivor of the crash began to climb. Surely I couldn't be the only one out of a crew of seven. Could I?

"Don't need depressing thoughts!"

"Gotta figure some way to last this thing out."

"We're not where we were headed, and that's the first place they'll be looking. Any number of routes through the mountains to the rescue site."

"Front moving . . . er, moved in. Terrific . . ."

The deputy had come up from the back and was straddling the center console. He and the other pilot were checking and cross-checking the maps. I was doing the flying. The weather in the mountains was pretty much as reported: CAVU outside of clouds below 8,000 feet, then a solid overcast at the tops of the mountains. We had worked our way east through the valleys and washes and were about 15 miles directly south of the rescue site. Our course now was to jump a low ridgeline and head north: the trouble being even the low ridgelines (7,000 feet and up) were IMC. But no sweat . . . if there's one thing the mountains have a lot of it's ridgelines. Just keep looking until you find one that's VFR. Official sunset was about 30 minutes away, still enough time if we could find some clear air soon.

Horseshoe canyon up ahead . . . possibility. Fly in, hugging the right side, around the dogleg . . . no good, the end is socked in too. Smart left and ease back out, heading to the west.

"It's not getting as warm as I thought it would."

"Where the hell is everyone else?"

"Remember what happened . . . try to remember and figure out what happened . . ."

"Flying alone . . . clouds, something about clouds . . . and the RADALT . . ."

We were flying westerly, discussing the approaching sunset which would put the big KIBASH on our rescue mission. On the right, the other pilot saw a patch of blue through the ridgeline. Transfer control, turn to the right. Level out headed for the blue. Quick inadvertent IFR brief: not planning on it, don't even want to, but if somehow we should, steady out, max power for climb, straight ahead.

The initial impact had been to our starboard mainmount.

"Clear sky then white. I remember the white/gray of the windscreen. IMC! Flying along . . . getting very tense . . ."

Wham! Inadvertent IFR. No warning, no white puffs here and there, just clear air, then nothing. On the gauges. Attitude, turn/ball, attitude, RADALT 2,000 feet, attitude, engine, attitude, turns, attitude, good power, no vertigo . . .

"Very tense . . . the RADALT going down. Still clear below, but lousy trend. Relaying to the other pilot: 1,200 feet, steady down . . ."

"Attitude, turns, attitude, RADALT 1,200 feet, attitude, turn/ball, RADALT 900 feet, attit . . . RADALT 800 feet, 700 feet, 6, 5, 400 . . ."

"Four hundred feet. That's it. All I remember. Four hundred feet . . . that's still a lot of room . . . isn't it??!"

The last image in my mind, of 400 feet on the RADALT, caused a lot of questions: 2,000 feet down to 400 feet is a pretty crummy trend, but 400 feet is still 400 feet, clouds or not. I later found out that our HH-46A hit a 405-foot rock.

The initial impact had been to our starboard mainmount. That was ripped off along with the right stubwing and the aft ramp assembly. The tremendous shock of the impact had further caused numerous tunnel/fuselage blade strikes and the aircraft is theorized to have had only a few more seconds of life. Fortunately for me, these few seconds never happened. The force of the first impact propelled the helicopter into the face of the mountain one-half to three-quarters of a second after the first impact. Somewhere between the first impact and the final fireball, my not-so-crashworthy seat and I were thrown clear, 200 feet down the mountain. Where I came to rest was well below the two impact points.

The day following the crash, and shortly after my bout with the PRC-90, I discovered that there was another survivor: the deputy sheriff had also been thrown clear and was situated up near the major wreckage. He had been burned and beat up quite badly. He could not make it down the same slope I could not make it up. We had to settle for shouting at each other for awhile. While the recognition of another survivor did buoy my spirits, it was not as much as I would have expected: there were now two of us in trouble instead of one. The ordeal, thank God, was soon to end.

Later in the morning, two hikers stumbled across the

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"We had it all."

wreckage and us. They attended to our injuries as best they could under the circumstances, gave us water, and dressed us in warm clothes. Leaving their packs, they then hiked out in 12 hours along the same route it had taken them 4 days to hike in!

The second night was worse physically than the first, with continued exposure steadily wearing us both down. However the psychological realization that we would soon be rescued more than offset any discomfort.

At first light the next day I felt a wave of emotions like none before or since as I heard the sound of an H-46 overhead. The clouds were in solid, but the Canadian HH-46A from 442 Rescue Squadron Comox, British Columbia gave it their all. Hovering IMC, with only a few rocks for reference, the Canadian crew effected the rescue and flew us out of the mountains to the nearest hospital.

The rest is history. The deputy, after numerous skin grafts to his hands, and many, many hours of physical therapy, is back on the job. Myself – a year later – I still have bone chips in all joints of my arms, which present an occasional nuisance. Considering the alternatives, we're both doing much better than we have any right to expect.

So, what does it all mean?

It means we had it all: an experienced crew that had been tested on many missions, a HAC that was one of the best in the unit for both headwork and as a stick, an aircraft that was working perfectly, good crew coordination and briefs, complete maps, good mission planning . . . I mean we had it all.

So, what do you do when you "have it all" and still wind up flat on your back on the side of a mountain? You keep a sense of humor and try to figure out how to do it better next time. ◄

For the Aviation Safety Officer

By Maj V. L. McMinn

I recently visited a unit where I was solidly confronted with the old "You're trying to hang the pilot" syndrome. Pilot error as determined by an AMB does not necessarily mean pilot negligence, and the question of negligence or of liability as a result of negligence is best addressed in other forums.

Any defined aircraft mishap requires an AMB investigation (OPNAVINST 3750.6M). If there is a question of negligence in a disciplinary sense, it should be addressed by a separate, simultaneous JAG investigation (JAGINST 5800.7B) and handled in appropriate forums (UCMJ, BUPERSMAN ART 3410300 or MCO 1000.60). Disciplinary action directed by a chain of command endorser as a result of seeing "pilot error" in an aviation mishap investigation report attempts to create a bridge between investigation for safety purposes and investigation to fix liability that is *not there.*

A recent Anymouse points up the effects of attempts to create this bridge. "This and other actions . . . [are] creating an atmosphere of paranoia in this [unit]." The comment of the safety officer indicated that ". . . pilots . . . will no longer voluntarily report safety matters for fear of being subjected to a board." Reporting units might take a little of the heat off themselves by expediting the conduct of JAG investigations. As I recollect, both types of investigations have similar time requirements. As a matter of philosophical interest, a call of supervisory error comes closer to implicating negligence than does pilot error. Supervisory error usually leans toward failures to plan or provide (acts of omission), while pilot error usually boils down to a momentary lapse of attention or a situation exceeding the pilot's ability to respond. Seems like the old adage about "people in glass houses" applies here. The person who holds someone else's feet to the fire should be ready to accept the responsibility for his own actions. ◄

air breaks

At the Ready. A CH-46D was cleared to depart Davis-Monthan Airport on the third leg of a cross-country ferry flight. The aircrew consisted of LT L. W. Hayner, pilot at the controls (PAC), LT R. L. Simons, pilot in command (PIC), and AD1 M. A. Arnold, aircrewman. All were attached to HELSUPPRON 11.

Approximately 30 minutes after takeoff, the pilots observed the No. 1 oil pressure drop to 8 psi (the crew had checked all oil reservoirs during both refueling stops and noted no abnormal oil usage by either engine). The aircrewman immediately went aft to check for a visual oil leak. At the same time, the PAC turned toward Cochise County Airport, some 15 miles away. The check revealed no visible oil leak, and all other engine indications were normal.

About 2 minutes after the oil leak check, the No. 1 engine failed. This was indicated by a loss of N_g and torque and a slight N_r droop. Single-engine procedures were executed and the No. 1 engine was secured. Preflight planning had shown that, during the early portion of the flight, level single-engine flight would not be possible due to atmospheric conditions and high aircraft gross weight. As the H-46 descended at 500-800 fpm, fuel dump was initiated. At approximately 1,000 feet AGL, the No. 1 fire T-handle illuminated, and was pulled by the HAC. The light went out almost immediately.

The crew had picked out what appeared to be a hard, flat, uncultivated farmer's field for landing. Prior to touchdown, fuel dumping was secured. The PAC then piloted the *Sea Knight* to a roll-on, no-hover landing, with a rollout of approximately 125 feet.

When the aircraft came to a stop, the crewman exited the bird to check the No. 1 engine exhaust area. Meanwhile, the pilots started the APP and then secured the No. 2 engine. The crewman observed a fire burning in the No. 1 exhaust and reported this to the pilots, who quickly glanced at No. 1 T_5 and found it to be at 400°C. The No. 1 T-handle was reset and a futile attempt made to crank the No. 1 engine. The fire T-handle was again pulled and the No. 1 fire bottle discharged. The crewman, who was standing on the port stubwing, informed the pilots that the fire was still visible. At this point, the HAC left his seat, grabbed a portable CO_2 extinguisher, exited the H-46, and passed the extinguisher to the crewman, who discharged the contents into the No. 1 exhaust, with negative results. The No. 2 fire bottle was then discharged, and the fire went out immediately. The APP was subsequently shut down and the aircraft secured.

Important factors relevant to this mishap follow:

- The crew handled this emergency professionally and in accordance with published NATOPS procedures. In-depth preflight planning and discussion made the crew aware that single-engine level flight was not possible during the initial portion of the flight. This enabled the pilots to plan and look for suitable landing areas at the first sign of engine problems. Their headwork resulted in a safe landing, with damage limited to the No. 1 engine.
- Engine failures will continue to occur. Emphasis on preflight planning, especially concerning the criticality of single-engine failures under high gross weight conditions, will help minimize damage as a result of such failures.
- Practicing single-engine flight in accordance with proper NATOPS procedures will build crew confidence in handling actual emergencies. This point should be stressed within each unit and this training performed at approved facilities.
- The firing of the No. 2 fire bottle should theoretically not have extinguished the fire in the No. 1 exhaust and may have been coincidental in this case. (The Engine Fire Extinguishing System is designed to combat engine compartment fires – not fires internal to the engine.) The fact remains, however, that discretionary use of firefighting capabilities – not firing everything at once – may have saved the mishap aircraft from burning to the ground. This should be emphasized to all aircrews.

By being **at the ready**, LTs Hayner and Simons, and AD1 Arnold, performed their tasks during this emergency in a cool, professional manner. For this, they are entitled to a hearty Attaboy!

Don't let your airplane overload your

- ☐ Abilities
- ☐ System capabilities
- ☐ Self-imposed limitations
- ☐ All of the above

By Maj Arthur P. Meikel III, USAF

THERE have been several mishaps this year in which the investigation board cited task saturation as a cause of the crash. I mention the phrase "task saturation" at the risk of losing the entire reading audience. Everyone thinks he knows what it is and how to overcome it, so the normal pilot's "OFF" flag comes out and he flips the page. This type of thinking is wrong. Pilots can't afford task saturation. A task-saturated pilot is the famous mishap looking for a place to happen. It can be and has been fatal this year.

What is task saturation? Let's call it too much to do at one time. Right away the average pilot pictures at least one engine on fire, a low fuel state, IFR conditions, and multiple system failures. Right! That is task oversaturation but there are lots of other kinds, too. What oversaturates you depends on a lot of things, for example, experience level. It takes a lot less for someone with little experience to be overwhelmed than those who have been through it all before. Also, someone who has outlined his priorities ahead of time and organized his crew is in a lot better position to deal with more stressful situations.

A close relative of task oversaturation is direction of attention. The "heavy driver" who is talking to the flight engineer or who is overly concerned with the exact sweetness of his coffee doesn't have much attention left over to spread among all the things he should be paying attention to. The fighter pilot who is trying to manage fuel, arm switches, and view his map may also be too busy to clear his flightpath at a critical time. It takes all you have **all the time**.

The solutions are many and simple. They take time and effort. They *all* take place on the ground.

- **Slow down.** Pace the mission to match your abilities and experience level. Raise your personal low-level altitude, raise your instrument minimums, stay away from the edges of your envelopes, plan more time between action points, or do more planning and studying before you fly.
- **Speed up your actions.** In a critical situation, there may be no time to fumble for a switch, interpret a gauge, or search for a checklist. Take the initiative to get some cockpit or simulator time to speed your motor reflexes and train your eyes. Highlight your checklist. Further speed can be gained by checklist familiarization and adopting rules of thumb. This "crew coordination for one" will help you keep up with the aircraft.
- **Improve crew coordination.** Improve your crew coordination by specific assignment of duties during specific circumstances. Talk through planned actions which are beyond NATOPS requirements. It's a frightening experience to see both pilots in a cockpit trying to solve an electrical system problem with no one flying the machine. If there were two or more emergencies in that cockpit, there is no telling what would happen. An emergency situation is not the time to *ad lib*.
- **Set up your priorities.** Sometimes in a tight situation you can't do everything. Of course, flying the aircraft is first; however, what you do next depends upon the significance of the emergency. Placing yourself mentally in all sorts of tight spots will speed your actions, e.g., if you are on short final in IMC, get vertigo and lose lead, what do you do? Go missed approach? Do you have the fuel? Lost wingman procedures? Fly the attitude indicator and continue the approach? The situations and solutions are endless. The comfort of your living room is much more forgiving than the flight environment. Knowing which checklist to accomplish first and setting up your priorities is a pilot function accomplished on the ground, in the classroom, in the operations shack, or in the alert facility. If you haven't thought out your priorities before you get into a tight situation, you may transition from pilot to a passenger in a projectile.

Task saturation is not acceptable in aviation when it is possible to avoid it. Slowing the pace of the mission, speeding up your actions, improving crew coordination, and establishing priorities can all be accomplished on the ground. By these actions, you may be able to turn a task-saturated experience into a manageable one. These ground actions are individually accomplished. They are dependent on your mission aircraft, and most importantly, your ability.

One of the most important things you, as an airman, can do for yourself is match up your real abilities with the system's capabilities. Establish self-imposed limitations and work to expand them. Avoid getting behind your personal power curve – which mishap investigation boards call "task saturation."

– Adapted from Flying Safety

anymouse

Fire Lane Obstructions

DURING one of my trips across the hangar deck of an activity at NAS Northeast, I happened to notice that the fire lane was obstructed by numerous units of ground support equipment. After talking to several of my fellow workers, I determined that the situation I had observed was a recurring problem which had previously been noted as a continuing safety hazard. The only variables in the violations noted seemed to be the types of GSE involved!

I suggest that an improved awareness of the importance of *unobstructed* fire lanes in the hangars be spread throughout the shore-based community and that all maintenance control CPOs pay closer attention to their hangar deck working areas. Any unit that has had to go through a complete evacuation of squadron spaces should be well aware of the importance of fire safety and clear fire lanes.

Smokey-the-bearmouse

Should "Downed" Aircraft Fly?

A COD aircraft landed aboard our ship recently and was "downed" by the aircrew for having a bleed leak problem. During subsequent trouble-shooting, our maintenance personnel (AEs) discovered two bad bleed leak detection elements in the system. One of these was located in the wing and the other in the No. 1 pylon. These elements are not easily cannibalized, and a stock check revealed none in supply. A decision was made by "higher authority" to continue to fly this "down" aircraft daily while making continued support flights between the shore station and the CV.

Our squadron has a long-standing record in both hours and consecutive months of accident-free operations. We did not attain this safety record without some luck, but good fortune can only be pushed so far!

Our maintenance crew felt the aircraft should have continued in a "down" status on the beach until parts were procured and the proper repairs of the bleed leak system completed.

Concernedmouse

UP is UP. And DOWN is DOWN. If a flight is considered an **operational necessity**, *the operational commander has the latitude to declare any aircraft is "up" ". . . for missions associated with war or peacetime operations in which the consequences of an action justifies accepting the risk of loss of aircraft and crew."*

Pilots and maintenance personnel may, at any time, recommend an aircraft status of "up" or "down" concerning a particular discrepancy. Maintenance Control (as directed by "higher authority") actually "ups" or "downs" aircraft, because they release them for flight. Still, the pilot-in-command (charged with safety of flight) may refuse to accept any aircraft which he considers "down" . . . unless operational necessity has been invoked.

Without the "big picture," second-guessing the operational commander's decision to fly this aircraft is difficult. The bleed leak detection system monitors significantly high temperatures which could be the result of a bleed leak or fire. The aircraft NATOPS requires the pilot to land ASAP if the BLEED LEAK warning light cannot be extinguished. The potential severity of this discrepancy is reflected in the decision not to fly passengers. But if it's unsafe for passengers, it's unsafe for aircrew. **If continued use of this one aircraft with this discrepancy is that critical, then the discrepancy ought to be fixed to protect the aircraft against loss.** *If the needed parts are NIS, a priority replacement should be acquired in order to ensure this aircraft's continued availability for its vital support mission.*

If operational necessity was indeed invoked by the operational commander, these considerations formed the risk assessment made against a backdrop of more demanding operational requirements. A more insidious danger lies in becoming comfortable with the outstanding discrepancy either as aircrew or supervisors. Recognizing the limits of "need-to-know," the conditions under which the rules are "bent" should be widely promulgated in order to preclude misunderstanding or relaxation in other safety areas at lower echelons in command.

Your concern has highlighted a gray area in naval aviation safety that is periodically seen in peacetime operations. Hopefully, the period over which this aircraft flew with this discrepancy was very brief. Efforts to complete repairs should not have been relaxed but instead heightened, and the cargo carried should have been of the highest priority and of the gravest importance to national defense. –Ed.

NOSTALGIA

This reprint of the inside cover and the Anymouse articles that appeared in the first issue of *APPROACH* (July 1955) are included here to present three things:

(1) Aircraft have become more sophisticated, more expensive, fly at greater speeds, and require more expertise on the part of those involved with naval aviation.

(2) The objective of *APPROACH* magazine has never changed – promote safety in the naval aviation community.

(3) There are similarities between what existed 27 years ago and what exist now that have also never changed.

Although the aircraft models and types in the Anymice are not current, some of the basic problems they present have never been completely solved. The personnel that fly, maintain, and direct the evolutions of naval aviation are always changing. The safety problems associated with those tasks still remain.

Attention to the most minimal task may save a Navy aircraft and, what is more important, save a fellow aircrewman. This presentation is to readdress some of these problems that have existed since the first aircraft ever made it into the air. Safety is paramount, and if we think it is something new, then maybe a reevaluation is needed. – Ed.

THIS, the first issue of *The Approach*, warrants a brief introduction.

In developing this new voice of naval aviation safety, the principal consideration was you, the reader.

Knowing that any successful aviation safety program must possess continuity of purpose, and clearness and simplicity in presentation, the format of *The Approach* was designed to include the three major areas of aircraft accident prevention: Flight Operations, Aviation Medicine, and Maintenance. The major theme of each month's issue will be the aircraft accident prevention subject outlined in the Aviation Safety Planning Guide.

Safety in naval aviation is a large and complex problem to which no single answer may be applied, but which requires many solutions, or approaches, to that problem.

To provide you – the pilot, the aircrewman and ground maintenance personnel with positive, continuing Navy-wide approaches to your individual problems, is our purpose.

With this in mind a survey was made within the staff of the Naval Aviation Safety Center to obtain a keynote expression of the purpose of the new magazine. In proposing *The Approach* as best identifying the Naval Aviation Safety Review as the voice of naval aviation safety we remind you that the magazine is only as good as you, the reader, make it.

For that reason, if you like our selection let us know your approval. If you have a better suggestion we welcome the submission of your ideas, names, and titles which might better express that identity.

This is your magazine, and we urge your assistance in making it the approach to positive safety in naval aviation.

Small Red Flag

Anymouse in an AD-4L was cleared to return to Jacksonville from a cross-country flight to Key West which involved a night takeoff. There were buildups and thunderstorms along the east coast of Florida and inland, but the west coast destination was VFR.

The section leader completed his engine runup and taxied out on the duty runway and took off. Anymouse, not to be left too far behind, rushed through his runup and followed.

Anymouse said, "There was no moon out that night and I was unprepared for the sudden transition from taking off by reference to the runway lights to flying in the pitch darkness after becoming airborne.

"The takeoff course was to the south, into complete blackness off the end of the runway. I shifted my gaze to my instruments only to be greeted by the red CAGED flag of my gyro horizon. I had commenced a right turn before passing over the water and continued around until the lights of Key West gave me a visual reference to continue my climbout.

"I wanted to gain more altitude before leveling off" stated Anymouse, "and I did not uncage my gyro in a climbing attitude. I had about 500 feet of altitude at this time. At 1,500 to 1,800 feet I entered a cloud which I had not seen because of the darkness of the night. The tower people were not aware of its presence either.

"I continued my climb on partial panel, hoping to break out. At about 3,000 feet I suddenly noticed my altimeter starting to unwind very rapidly. My first impulse was to haul back on the stick, but I forced myself to check my needle-ball and saw the needle lying in the corner.

"Using the technique which had been drummed into me in basic instruments: 'level wings, then stick back,' I effected recovery at about 1,500 feet and shortly thereafter broke clear. I steadied up the plane, uncaged my gyro, and joined with my section leader.

"I found out after we landed that the section leader had been playing touch-and-go with the cloud hanging over the field for the same reason that I had. Namely, it was impossible to see until you had entered it and saw your lights loom up."

At the time of this incident Anymouse had a total of 490 hours with about half in Able Dog aircraft. He also had a valid White Card issued by NSAWF.

Anymouse's opinion? "Never rush yourself."

Tool Sin

"I took off in my HUP from the deck of a carrier to assume plane guard position. Immediately upon becoming airborne my cyclic stick stuck in the full left position. As I was attempting to turn 90 degrees to the right into the wind (I was still broadside to the wind), I was blown sideways off the port bow.

"By manual strength alone I was able to keep the helicopter from rolling over, but I found it impossible to right the plane completely or to turn to the right. I let the plane carry me around in a 360-degree turn which put me abeam of the island. I added RPM and skidded the helicopter over the spotted aircraft on deck to just ahead of the forward elevator where I immediately set the plane down.

"Upon inspecting the helicopter it was found that a screwdriver had become lodged in the control cables under the floorboards, aft of the pilot. Since the screwdriver was identified as one which did not belong to my crew, it was obvious that it had to belong to the maintenance personnel from either the ship or the air group. Five days previously they had helped to solve some electrical difficulties.

"In the HUP type helicopter the floorboards are approximately 2 inches from being flush with the bulkheads on both sides of the plane. Therefore, it is recommended that after all interior work requiring the use of loose tools or gear, all such loose gear be accounted for and an *inspection* be made under the floorboards for loose articles.

Read that Yellow Sheet

Anymouse took off on his first night hop in an F9F-6 and when airborne rolled into a turn to the right to avoid an inhabited area. He then commenced his climb schedule and upon reaching 13,000 feet decided to make a turn to the left to calibrate his turn-and-bank indicator.

"Upon recovery from the turn to the left I experienced considerable difficulty in raising the left wing," said Anymouse. "There was considerable delayed action before the controls would react. I turned back toward the field and started a slow, descending spiral, letting down into the traffic circle.

"The spiral was made to the left and the left wing tended to roll to the left. By rough action with the stick the wing could be picked up. When at the 180-degree position at 5,000 feet, I started my approach by putting my wheels down at 200 knots and my flaps down at 170 knots.

"I planned a high straight-in approach so that if I lost complete flaperette control I would either be high enough in my turn to eject or be on my straightaway and control my wings with the rudders.

"My approach was crowded and I was unable to dissipate my speed and altitude. Rather than take a wave-off, I landed the plane hot and blew the port tire on touchdown at approximately 170 knots. I was able to keep the plane on the runway and stop without using the arresting wire."

In analyzing this incident the following errors were pointed out by Anymouse:

1. Failing to read the past history on the plane when signing the *yellow sheet.* This plane had recently been downed for a sticking flaperon valve.
2. Making a left-hand approach rather than a right-hand approach. The plane was easy to control in a right turn.

Engine failure and Vmc (Air) in multiengine aircraft

By LT James J. Miller, USN
VP-31

MINIMUM control speed (V_{mc}) is a frequently misunderstood concept in pilot training. Simply defined, it is the speed below which a controlled flight direction *cannot* be maintained. Factors affecting V_{mc} (air) include density altitude, bank angle, and the power being produced by the remaining operating engines. It should be noted that V_{mc} (air) is unaffected by aircraft gross weight.

All multiengine pilots understand that with equal power on all engines in coordinated flight (ball in the center), the aircraft flies straight through the air. Put asymmetric power on the aircraft and a whole new set of rules apply. The thrust imbalance present with asymmetric power produces a yawing moment with a magnitude dependent upon the amount of thrust imbalance and its moment arm. In order to counter this yawing moment with the wings level, a deflection of the rudder is required to achieve a straight flightpath. In other words, the asymmetric power vector trying to turn the aircraft must be equalized by a yaw vector at the empennage, necessitating a large amount of rudder deflection. Now coordinated flight (ball in the center) requires a significant amount of sideslip. This sideslip makes the aircraft extremely inefficient, causing climb rate to decrease and minimum control speed to increase. Contributing factors to this phenomenon include:

- **Increase in Form Drag.** The length of the fuselage is now exposed to the relative wind, where at zero sideslip only the nose is directly exposed.
- **Increase in Induced Drag.** The portion of the wing directly exposed to the relative wind is reduced. The amount of lift per square foot of wing (wing loading) must be increased to maintain a constant climb rate at a given airspeed. Angle of attack must be increased in order to increase lift. As lift increases, so does induced drag.
- **Prop/Engine Performance Decrease.** The optimum prop/engine performance occurs when the relative wind is perpendicular to the plane of prop blade rotation. When the aircraft is sideslipping, this is not the case.
- **Rudder Deflection Effectiveness.** Once full rudder deflection is reached in an attempt to maintain the necessary sideslip to achieve a straight flightpath, airspeed must now be increased in order for the vector produced by the deflected rudder to equal the vector produced by the thrust imbalance. Therefore, minimum control speed increases if the wings remain level. The amount of sideslip for a straight flightpath can be reduced with a slight angle of bank. By *banking away from the inoperative engine,* the inclined wing produces a lift vector which reduces the necessary yaw vector at the tail. As a result, the sideslip is less, the aircraft is more efficient, and the optimum minimum control speed is achieved.

A straight flightpath with optimum aircraft performance and the desired minimum control speed in an asymmetric power condition occurs with the ball slightly out of center

Case 1

Conditions in Case 1, where the wings remained level and the ball centered, resulted in the following:

Climb Rate at V_{50} (3) = 190 feet/minute

Altitude reaching extended centerline
1,000 feet beyond the end of the runway = 60 feet

Minimum Control Speed (V_{mc} air) = 108 knots

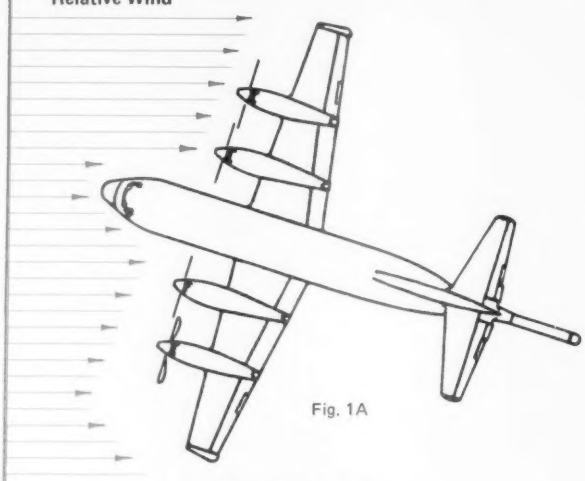


Fig. 1A

Fig. 1B

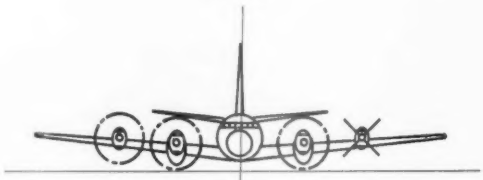


Fig. 1C

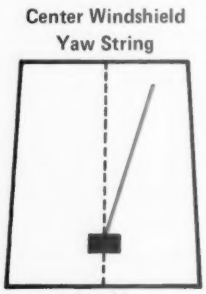


Fig. 1D

Case 2

Conditions in Case 2, where the pilot banked away from the failed engine 5 degrees and the ball was slightly out toward the operating engines, resulted in the following:

Climb Rate at $V_{50\,(3)}$ = 350 feet/minute

Altitude reaching extended centerline
1,000 feet beyond the end of the runway = 110 feet

Minimum Control Speed (V_{mc} air) = 95 knots

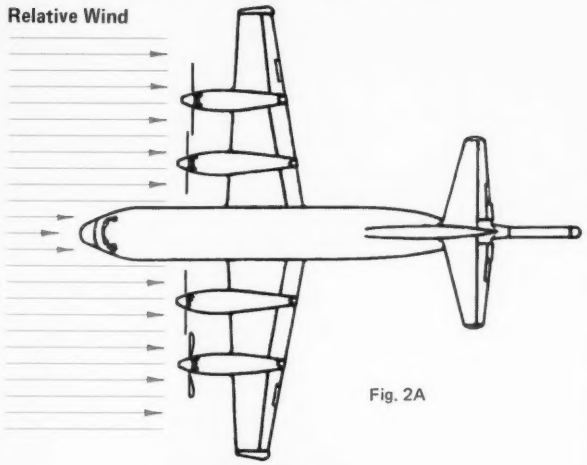


Fig. 2A

Fig. 2B

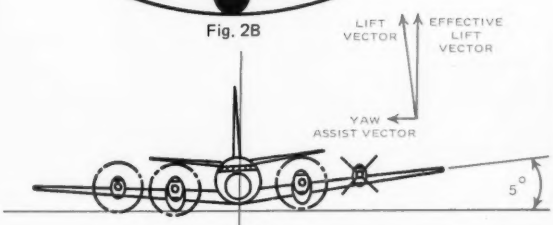


Fig. 2C

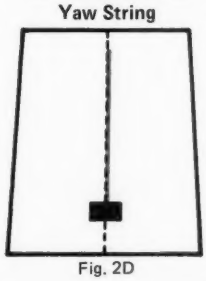


Fig. 2D

toward the operating engines and the *failed engine elevated* to some angle of bank. In the P-3 aircraft, optimum angle of bank is 5 degrees away from the failed engine. Any bank angle deviation from optimum causes minimum control speed to increase at a rate of 2.5 knots per degree. The purpose of this discussion is to highlight this fact utilizing figures obtained during a recent P-3 flight.

The most critical moment for minimum control speed and optimum aircraft performance in the event of an engine failure would be during takeoff, waveoff, or any other flight condition requiring a high power setting at a low altitude and airspeed. The case of an engine failure at refusal speed (V_r) was chosen to demonstrate the aircraft's performance in a wings-level, ball centered condition (Case 1) versus a condition with the wings banked 5 degrees away from the failed engine and with the ball out of center towards the operating engines (Case 2).

Constants which existed were:

Aircraft Type – P-3C
Gross Weight – 101,000 pounds (±3,000 pounds)
OAT – +65° F
Field Elevation – 34 feet
Wind – Calm

For both cases, available shaft horsepower was restricted to 2,500 SHP in order to simulate aircraft performance in a heavy weight condition. Also, available runway was limited to 5,000 feet. These limitations induced a refusal speed of 110 knots. Rotation speed remained at 115 knots. The engine failure was induced by retarding the No. 1 power lever to FLIGHT IDLE at V_r.

The figures in Cases 1 and 2 represent an average of five runs in both cases. None of the readings varied more than ±40 feet/minute or ±10 feet. The NATOPS-recommended technique for handling a power loss at V_r was exercised in all runs.

A quick comparison of the data reveals that the Case 2 technique is clearly the optimum performance under these conditions. It should be noted that, in an actual heavyweight takeoff where horsepower available might be as high as 4,600 SHP, the disparity between Case 1 and Case 2 would be significantly greater. The greater the available horsepower, the more optimum Case 2 becomes.

The P-3 NATOPS Flight Manual states: "After liftoff, raise the wing with the inoperative engine 5 degrees to optimize V_{mc} air and control." Further discussion includes the statement, "Use rudder in maintaining a straight flightpath." It should be obvious to any pilot that if you have an angle of bank and you center the ball, the aircraft will turn. **In order to comply with the mandatory angle of bank and a straight flightpath, the ball must be out of center.**

It is the responsibility of the flight instructor to teach students how to best operate the aircraft. This discussion should provide multiengine instructors some food for thought in teaching proper procedures for engine failure and optimum aircraft performance.

The article "Single-engine Procedure in Twin-engine Aircraft" in the APR '81 issue of APPROACH discussed the 5-degree bank and ball-out-of-center technique for twins. This article also gave a more detailed aerodynamic explanation of why this procedure works. The data generated by LT Miller and VP-31 prove the value of this technique for multiengine aircraft, as well. – Ed. ◄

bravo zulu

Capt Joe Towle, USMC
Maj Barry Hanchett, USMC
MAG-31

FOLLOWING a 400-knot strafing pass in a TA-4F, Capt Joe Towle (pilot) and Maj Barry Hanchett (copilot) were confronted by a loud, banging noise. Investigation revealed the external canopy handle access door had opened and was flapping against the fuselage in front of the left engine intake. Realizing the possibility of FODing the engine, Capt Towle immediately reduced power and raised the nose to decrease airspeed. In spite of this precaution, the forward latch on the door separated and was ingested by the engine while the aircraft was decelerating through 220 knots at 6,500 feet. This resulted in massive and violent compressor stalls as the RPM decayed to approximately 82 percent. All external stores were jettisoned and fuel was dumped to reduce gross weight and keep the chugging *Skyhawk* airborne.

After a Mayday was broadcast, the aircrew reviewed NATOPS procedures and discussed available alternatives. With airspeed decreasing through 150 knots and a sink rate of 100 fpm, preparations were made for a controlled ejection. Approaching 3,000 feet AGL, the engine RPM suddenly recovered to approximately 90 percent. As a result, Capt Towle determined that sufficient thrust was available for gradual acceleration and a climb. Avoiding mountainous terrain and populated areas, Capt Towle and Maj Hanchett expertly set up the aircraft for a precautionary approach.

Engine RPM began to decay again as the final landing approach was commenced from 14,000 feet, 7 miles from touchdown. Compressor stalls continued as the sick *Skyhawk* was skillfully flown through a precautionary approach to a safe landing. Postflight investigation revealed extensive damage to the engine compressor section, which ultimately required depot-level repair.

The calm and professional manner in which Capt Towle and Maj Hanchett handled this extreme emergency prevented a serious mishap and saved a valuable aircraft. Well done!

Capt Joe Towle, USMC (left); Maj Barry Hanchett, USMC (right).

"Shades"

THE night sky is lovely through green-tinted glasses. Here is yet another strange and dangerous tale to prove there is nothing ordinary, standard, routine, or predictable about carrier qualifications.

Our squadron had arrived at the NAS 2 days early, in preparation for a CQ refresher period. We had a 1300 overhead time, so we had a leisurely brunch followed by a thorough brief covering all aspects of the flight. We'd already undergone refresher training as well as Type I, II, and III training with the air wing and ship, and we'd watched our preparedness levels grow. We felt fairly comfortable and thought we knew what to expect. Even taking into account the 3-week standdown, we weren't ready for what happened, and as soon as we manned up, all bets were off.

We filed as two sections of two and preflighted the aircraft. The first section was taxiing, and we had just started engines when the tower notified us our overhead time had been moved to 1500. We promptly shut down and waited for 2 hours. Our next attempt was at 1430. This time we managed to get airborne and halfway to the ship before we were told to turn back. The ship still wasn't ready, and visions of another night of liberty tantalized us. We landed, refueled, did a quick turnaround and, just to make sure, verified our overhead time via Raspberry (HF Net).

Our two sections of two launched at 1650 for a 1715 overhead. The ship, of course, was still not ready for us, so we joined up in high holding, waited, and watched the sun sink lower and lower. Finally it dawned (or should I say *eveninged*) on the air boss that he had four aircraft overhead he needed to get aboard. With 17 minutes of official sunlight remaining, he kicked all but three other aircraft out of the pattern and called, "Your signal's dump, Charlie." It had been a beautiful day with only a few clouds, so there was plenty of sunlight. As we "pushed," however, my pilot announced, **"I hope we get aboard soon, because I thought we'd be doing day CQ, and I didn't bring my clear glasses."**

Now it's *really* getting dark! Just for good measure, the deck was fouled, so we waved off and took it around. This time the deck was ready, and we trapped aboard at 1840, 8 minutes after sunset. Seven minutes later, we were airborne again!

How did that happen? Well, of course we needed a "day" cat shot to be day/night qualified, there was still quite a bit of light, all we had to do was turn downwind and land again, and we didn't want to announce our problem to the world . . . Throw in a little confusion, a little indecision, and there we were, airborne and looking for our downwind interval in a nighttime, Case I pattern. To compound our problems, all four aircraft were reluctant to turn on their lights for "day" landings, and all had a three-tone, flat gray, camouflage paint job which made them hard to see in daylight, let alone at deepening dusk.

At this point we opted to notify the skipper of our problem and warn him that we might find it necessary to return to the beach. With aircraft all over the sky, and the sun long gone, the boss opted for a Case III bolter pattern, and we all extended to a 3-mile downwind. We had decided to "try" one approach without the dark glasses, and if "Shades" couldn't find the ball and pick up enough other visual cues, we'd return to NAS. At 3 miles on final, we finally sorted out who was No. 1, 2, and 3 (as No. 4 finally picked us out of the gloom and changed course to turn behind us instead of in front of us). With a good start, a few lineup calls from the right-seater, and some help from the LSO, we trapped aboard at 1915, 43 minutes after sunset.

Incidentally, "Shades" now carries both sets of glasses.

HELP!

Helicopter versatility and multimission capability have provided the fleet with an invaluable asset. Sometimes, however, this versatility can lead those who control helicopters to provide less than adequate attention in the areas of air control, mission briefing, and contingencies. An example is described in the article which follows.

By Russ Forbush
APPROACH Writer

AN H-3 crew was briefed at 1615 for their upcoming mission. The weather forecast did not include any unfavorable conditions. During preflight, however, light to moderate rain was falling. At 1830, the crew manned their aircraft (which we'll refer to as Firefly 701). All preflight checks were conducted, engines started, rotors engaged and, at 1855, the H-3 was launched from the CV to commence an ASW/plane guard mission. Following the launch of two S-3s, Firefly 701 was cleared to the 1-mile arc. At 1915, the CV Antisubmarine
16 Aircraft Commander (ASAC) assigned Firefly 701 to a sonar dipping station on the 235 radial, 7-10 miles from the CV. Because of a jammed sonar reeling machine Firefly 701 was shifted to an ASW station 280 degrees/10 nm to utilize MAD tactics. About 45 minutes later, the H-3 crew observed thunderstorm activity some 20 miles to the west. Concern about the weather began to mount as the CV continued to steam on a heading of about 270 degrees and at 2030, the pilot requested a Charlie time and was advised it was set for 2300. Fifteen more minutes passed and the pilot asked the ASAC for a weather picture. None was available, since the radar used to provide weather information was under EMCON restriction.

We've now reached the point where the situation begins to deteriorate. The H-3 was being squeezed between the CV and the squall line and therefore was in and out of the clouds at an altitude of 400 feet MSL. The crew was in a MAD configuration, since the sonar reeling machine was down. During the next few minutes, Firefly 701 was operating in IMC with lightning and severe turbulence. Throughout this period, the pilot kept calling the ASAC for weather and clearance from the area, and kept getting the same answer: "I don't have a weather radar."

Finally, at 2130, the ASAC assigned Firefly 701 a new sector of 130-210 degrees, 10-13 miles from the CV. Upon entering this area, more severe turbulence was encountered. The pilot refused the sector and asked the ASAC to request the ship to head towards the helo which was now 20 miles to the east. At 2135, CV Approach Control contacted Firefly 701 and was apprised of the H-3's situation. The helo was separated from the carrier by a squall line, and although several penetrations were attempted, the turbulence was too great and the H-3 was forced to retreat.

The CV Air Operations Officer called the ship's Operations Officer and informed him of Firefly 701's plight. After a brief discussion, they agreed that a recommendation should be made to turn the ship towards the H-3 in view of the existing environmental conditions and the aircraft's fuel state (about 2 hours remaining). The Ops officer called the bridge at 2200 to talk to the CO but was informed by the navigator that the CO had retired and he (the navigator) was the CDO. The navigator was informed of the problem, and the Ops officer strongly recommended that the ship, now west of the squall line, turn toward the east and head for the H-3, which was now 25 miles away. The Ops officer headed for Air Ops with the impression that the navigator would order an immediate turn to the east. Upon arrival, he so informed the Air Ops officer of that intention. As the time neared 2215, the Ops officer noted that the ship was slowing down but not turning. He again called the bridge and requested that the ship be turned immediately. He asked if the CO was on the bridge and was told "no." The navigator stated that he thought the CO should be informed, which was concurred with by the Ops officer. The CO arrived on the bridge at 2218 and, soon after, passed the word to Air Ops that he was proceeding towards the H-3. Prior to the CO's arrival, the navigator had turned on the radar and quickly identified Firefly 701 and the significant squall line.

Between 2130 and 2300, Firefly 701 attempted several penetrations of the squall line only to be forced back on each occasion. At times the aircraft became almost completely uncontrollable due to severe turbulence, with airspeed and barometric pressure readings virtually useless. At 2300, 701 was down to about 1200 pounds of fuel, and was now 45 miles east of the CV. All other U. S. units were also on the west side of the squall line. The closest unit to the H-3 was a CG. At this point, the pilots discussed the situation and decided that they had one choice: to attempt another penetration of the squall line, since it was doubtful any ship could make it to their position prior to their fuel starvation.

The crew elected to penetrate on a heading of 270 degrees

and an altitude of 1,500 feet MSL. During penetration, the aircraft again encountered severe turbulence along with heavy rain and hail. Fortunately, luck was with the crew, and at 2315, they were on the west side of the squall line, clear of the heavy weather. The CV then directed the crew to attempt a night HIFR with the CG. Although neither pilot had ever accomplished a night HIFR, everything went well, and Firefly 701 was fueled to 2,000 pounds. The time was now 2345.

Following refueling, the pilot asked for vectors to the carrier, but instead was told to land on a nearby 963 class DD, **even though neither the pilot nor copilot had ever made a night approach to or landing on a 963 class DD.** The pilots talked this over and repeated their request to return to the carrier. The answer came back "Negative, land on the DD." The H-3 was to land on the DD and await the arrival of the carrier which was 24 nm away.

Somewhat frustrated, the pilot took up a heading for the DD which was 2 miles from the CG. The pilot flew a night IFR approach with a transition to a stabilized glide scope indicator approach to a hover over the deck of the DD. Unbeknown to the pilots and the CV, the DD did not have operable forward structure illumination lights. Had the CV been aware of this, it might have had a bearing on the decision to have a non-night-qualified pilot attempt such a landing. At approximately 2355, the pilot lowered the collective after receiving a tailwheel clear call from the first crewman and a signal to land from the LSE. The helo started drifting aft and right, about 5 feet above the deck, while still in a descent. The second crewman tried to notify the first crewman that the tailwheel was getting close to the deck edge. He had to use hand signals to relay this information, because his ISC (Station 6) was inoperative. (Rainwater had entered the H-3 through the open cabin door during preflight and saturated both Stations 5 and 6.) This malfunction was known prior to takeoff from the CV, but the troubleshooter was unable to effect repairs before the H-3 took off.

Before the first crewman could notify the pilot of the impending danger, the tailwheel hit the deck, bounced, and crossed the deck edge overhanging the safety net. At this point the AKT-22 antenna contacted the deck edge. The pilot immediately lifted into a hover as the waveoff lights illuminated. He then transitioned the H-3 to forward flight and had the crewmen check the aircraft for damage. They reported that the AKT-22 antenna was broken and was hang-

Another transmission was made by 701 to the CV advising that to land on the DD would probably cause the hanging antenna to puncture the underside of the H-3.

ing vertically from the H-3. They could not detect whether there was any damage to the tailwheel. This information was transmitted to the CV by 701 with another appeal to return to that ship for landing. Again the request was denied, and they were told to make another approach to the DD and land there. (The CV's reasoning for making this decision was that it would be safer for 701 to land on the DD than to fly IMC to the CV which was still some distance away.) Another transmission was made by 701 to the CV advising that to land on the DD would probably cause the hanging antenna to puncture the underside of the H-3. Based on this new information, the decision was made to bring 701 back to the carrier and a steer was provided to the H-3 crew. Upon arrival at the CV, the helo hovered over the deck so that the damage could be assessed by flight deck personnel. Following this, an uneventful run-on landing was made.

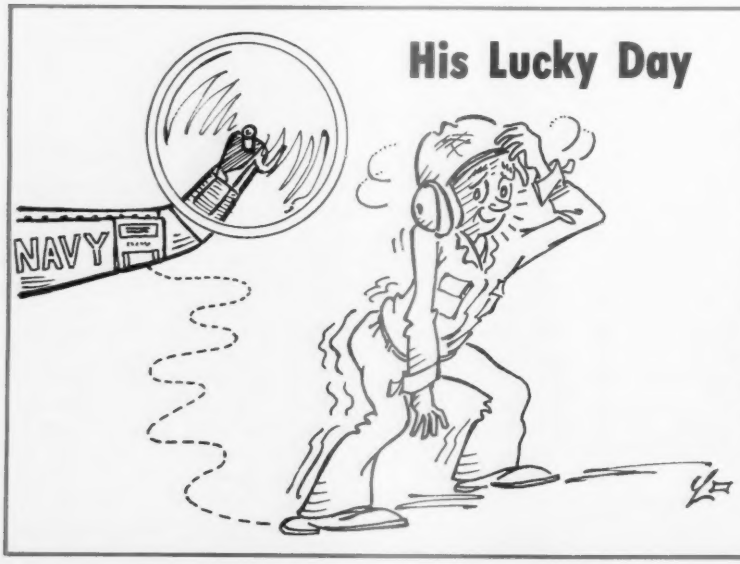
One cause of this mishap was pilot-induced aircraft control movements which allowed the H-3 to drift during the attempted landing on the DD. But, there were significant causal factors working against the pilot, and they are discussed below:

- The pilot was fatigued. He had been airborne for about 5 hours at the time of the mishap and battled severe weather during most of that period.
- The DD did not have operating forward structure illumination lights and failed to make this known to other units in the group.
- The second crewman's ICS (Station 6) was malfunctioning and this prevented him from quickly alerting the pilot that the aircraft was drifting during the landing attempt.
- There was a lack of communications between the CV's air control personnel. The ASAC was well aware of the problem 701 was having, but Air Ops didn't get into the picture until 2135. The CO wasn't notified until after 2200, nor was the ship's weather radar turned on until after that time. Timely action on the part of the ASAC to alert others of 701's dilemma would have prevented this near-extremis situation from developing.
- Both pilots were lacking small deck (DLQ) experience. The pilot was day qualified, but this was his first night landing. The lack of small deck availability prior to deployment prevented him from becoming qualified.

Two specific recommendations surfaced as a result of this mishap and were passed to cognizant authority for action. They are:

- Installation of a lightweight/tactical radar in H-3 aircraft to enhance operational effectiveness and safety.
- Waterproof covers for ICS Stations 5 and 6 to prevent water intrusion.

We were fortunate that 701 received little damage and ultimately was recovered on the CV. Had the crew been unable to penetrate the squall line, a ditching at sea would have been the sole remaining option. While helicopters are versatile, they, like fixed-wingers, are affected by such problems as low fuel states and adverse weather. Helicopter controllers must seize the initiative and provide the **Help** needed for rotary wingers when they are placed in a bind such as was the case with Firefly 701. ◄



A COPILOT was strapped in a helicopter, which was turning up, when he decided to leave his seat and climb out to secure the cargo doors. After closing the left door, he elected to *cross under the tail pylon* to close the right door. As he crossed under the pylon, he misjudged his distance from the tail rotor and his helmet was lightly hit by a tail rotor blade. *Good grief!* The copilot received a small abrasion on the right side of his head. He missed having his head split open by less than half an inch. When brains and blades tangle, it's no contest.

An open letter to frustrated jet jocks

By CDR A. S. Polk
VAW-115

OKAY, so you weren't handpicked to fly F-14s. You weren't in the initial cadre flying the F-18. The "Cadillacs of the Air" (A-7s) and "MIG MASTERS" didn't have a seat for you. You were too good looking for the "uglies," and other jet-propelled aircraft were full of old guys. It isn't the end of the world! Or is it?

A large number and variety of naval aircraft are not, according to current standards, high performance. There is a reason for that – they weren't meant to be. They are still pretty peppy and, in most cases, unforgiving of human error.

Sure, we all know you have high performance in *your* design. You did a loop in a T-34 with your recruiter, and you were *sierra hotel* (all things considered). The recruiter was delighted and told you how great it was going to be. (He used to be a detailer!) You could feel in your bones that he was right. "I'm going to be the best jet jock they've ever seen!"

Guess what? When you arrived at the "cradle of naval aviation," there were clones everywhere. Everyone was thinking the same thing.

As time passed, things didn't work out as expected. While all the SNAs were, in fact, *sierra hotel* (except those who dropped, of course), and this was verified every weekend at Pensacola Beach by all the women, the reality of aircraft numbers and design became increasingly clear. Your last stop before getting your wings was Milton or Corpus Christi.

How did you react? You had many options to choose from. You could have DORed. You could have accepted the fact that your aircraft and mission were at least as impressive and important as anybody else's. You could have become the best damn straight and level autopilot driver in the world. You could have lied to the women on the beach. But you didn't.

You reacted in the time-honored, frustrated jet jock manner. Pen in hand, you drafted an **official Naval letter** – the first of many. In this letter, you stated, modestly but with great conviction, just how great you really were, especially compared to the other plumbers you saw going through the RAG. There was no doubt in your mind that, once you mastered flying with a yoke, you would be better than your RAG instructors. (They were a pretty dull group anyway, sitting there criticizing you for trying to turn a 60-degree break into a 90-degree break.)

A few months after reaching your ultimate duty station, NMPC acknowledged your prowess but noted the current needs of the service dictated you stay where you were. Being pretty fluent in your **official Naval letter** procedures, you knew you could wait a few months and reapply. And so you did. Over and over and over again.

Somewhere along the way, you could have gone back to the original list of options and reevaluated your position. (Some of your friends did, and even though they aren't as cool as you, they're pretty good pilots and seem to be doing okay in their profession.) But you didn't.

Chugging along in your used van, taking your three kids to the commissary, you are still too cool, too *sierra hotel*, to spend your life straight and level. Remember the hot break at the Air Force base on your last cross country? (And the hot brake on the ramp because you taxied so smartly?) Remember a few months back how you showed the new co-pilot how to do a wingover? (And that you only lost 2,000 feet in that little pullout at the end?) Remember the fisherman jumping out of his boat on your low pass? (And the flight violation he hit you with?) Remember how you impressed the crew with your simulated multiple emergency approach under actual IMC? (And how pretty the flares were from the wheels watch?) Yep, no doubt about it. You are head and shoulders above the straight and level set, even if the CO is too screwed up to notice.

Well, Ace, where do you go from here? More letters? More impromptu airshows? More scared crewmen covering for you but negotiating with the schedules officer to keep away from you? More strange looks from the squadron wives? Or will you really be as smart as you think you are? Will you realize that your aircraft will never be high performance no matter how hard you try to make it that way? Will you curb your frustrated jet jock ways in favor of perfection in straight and level, 100 percent professional missions? Or will you let your frustrated jet jock mentality bury you in a smoking hole?

The Great Night Engine Failure

Contributed by HSL-35

SOMETIMES there are rewards being the squadron NATOPS officer – the hard-nosed stickler for details that many people avoid. The following letter was received in my office following a night episode which happened on one of our deployed detachments.

The letter is from the det OinC, the HAC during the ill-fated flight, and gives details and personal insights into what occurred, things which never show up in message incident reports.

The reason for this letter is to discuss a few crew coordination items in hope that "Maybe the saga will convince some of our young guys and HACs-to-be that there really is a reason for reading the blue book (NATOPS) and listening in training lectures." I hope that the humor adds to, rather than detracts from, that goal.

Squadron NATOPS Officer

Dear ELF:

Thought I would write and give you the real story of "The Great Night Engine Failure" so if there were any lessons to be learned you could pass them on to the wardroom.

My copilot and I had hot seated around dusk to bag some dopplers and half moon pink time so the squadron Ops boss would think we were night flying. We had done about six dopplers, four low vis approaches, rigged one merchant, and even flew through a couple of clouds and rain showers. I decided we'd tempted fate long enough, so we came in to get a couple of bounces and call it a night. The weather was fine: good visibility, a few scattered showers, and a solid horizon. The moon was fair, but you didn't need your dark visor down to kill the glare. Of course, when I tell the story a year from now it will be severe dark, in thunderstorms, sea state seven, pitching deck – you know, real DFC stuff.

My copilot was in the final phase of a port to starboard approach at 80 feet AGL, 15-20 knots, when he called waveoff because the ship had not cleared us with a green deck. If you remember my NATOPS lecture, I told you the T-58 compressor only stalled during a decel. (I'll bet you believed it too.) Well – I LIED! My copilot had just pulled collective when it happened. The left engine started sounding like a 20mm machine gun, shaking like a wet cat in a windstorm, and making lots of sparks. Muffled explosions (as per NATOPS)? NO WAY! Well, instantly I knew something was amiss, especially when round fireballs about one bellmouth in diameter came out the front of the engine.

My copilot froze the collective, lowered the nose, and got the aircraft flying again at 40 feet AGL. A beautiful job for a rookie. This must reflect on my outstanding training program. One lesson; if he hadn't done the right thing right then, it was happening so fast, I'm not sure I would have caught up in time to be of any use. Even so, we drooped to 98 percent N_r before it started flying halfway normally. If there had been an efficient way to convert adrenaline to horsepower, we could have **outclimbed an F-4**.

I took control of the aircraft about 40 feet AGL and started a slow climb. (A fast climb wasn't really an available option.) Of course the engine was still acting like a spastic sparkler, and the noise was ruining my concentration. The copilot was watching T_5, I was watching N_r and altitude, and the crewman was making his worry beads smoke. About this time, T_5 was 830 to 840°C, N_g – 52 percent and torque – 0. The copilot commented that maybe it was time to secure the engine. I don't know if it was 9,000 briefs, previous training, or self-preservation, but we both touched the No. 1 ECL before he pulled it back, to agree it was the correct lever, then I blocked No. 2 ECL. He went to IDLE first, but it made absolutely no difference in the stall. At last, a *legal* chance to *single-up*, so off it came. Boy did it get quiet!

We were working 60 degrees starboard winds at less than 5 knots on the approach, and in a calm, cool, logical voice I asked the ship to maneuver to get port winds at 20-25 knots. The HCO offered a green deck with winds 60 degrees starboard at 2 knots. I declined that option and the OOD did a great job of getting the ship steady on course. *Voila* – wind 30 degrees port at 25 knots!

While the ship maneuvered for winds, we decided to prepare for landing. I directed the jettison of the auxiliary tanks but demurred when the copilot mentioned they had been empty for an hour. Undaunted, I ignored him and told him to jettison the 12 sonobuoys onboard. He didn't have a good argument for that, so he started pushing buttons. NO JOY! I recalled that sonobuoys have something to do with landing gear, and sure enough the landing gear were down. Somehow I forgot to raise the gear during waveoff. *Must have been distracted.* Since I knew that the armament circuit disarm bypass switch is somewhere forward of the relief tube, we raised the gear instead. The launcher worked as advertised.

I knew you would get all huffy if we didn't look at the NATOPS PCL, so we started a search for one. We finally found an old one in a helmet bag wedged in the tunnel belonging to a lieutenant (junior grade) (now a senior lieutenant commander). Good enough for me.

The PCL didn't give us any new ideas except trying a restart. We decided against that because my previous experience with a restart (don't ask) caused generators to drop off the line, and I wasn't too enthusiastic about being single engine, having a hot start in progress, dropping generators, RAD ALT and ASE, and losing my chance to be a hero. We were going to check in the Single Engine Airspeed chart, but that's pretty tough to find in the dark when your main interest is **staying dry**. I had a fairly good feel for what V_{se} would be in those conditions, so I acted confident and my copilot bought it.

We set up our approach to hover at 200 feet AGL behind the ship per the CO's "That's the way we did it in the old days" method. Surprise; it works, and is a valid confidence builder. It also gave us a chance to check power and topping. Of course, you have to stifle any preconceptions you may have about the dead man's curve. You know, what the XO (a TPS graduate) calls the "H-V diagram." I guess that's TPS talk?

I set up the approach to be a steep, almost precision approach, then briefed the copilot to call torque and N_r, and told the crewman to keep the worry beads smoking. The approach seemed fairly comfortable. As we passed through about 60 feet AGL, the nose came up, which made us uncomfortably slow, but we worked out of it with no sweat. Crossed the deck edge slightly hot and made the circle with no problem.

We let the engine cool down and started to check it out. No external FOD was noted but when we turned it up, it sounded like a broken beer mug was inside the turbine. Now we are waiting for a new engine.

Lessons Learned

1. To fly at night laughs in the face of common sense and the gods will get even at the earliest opportunity. If flying at night is absolutely necessary, send two expendable lieutenants (not really a valid suggestion).

2. In-close to the ship (below 100 feet AGL), if something goes wrong, the "young" guy flying will have to take appropriate action **immediately** because it takes too long for **"old guys"** to work our magic and make the recovery.

3. Slow flight checks at or above 200 feet AGL for power and topping checks are a good idea. If nothing else, it forces you to think of something else besides impending water entry.

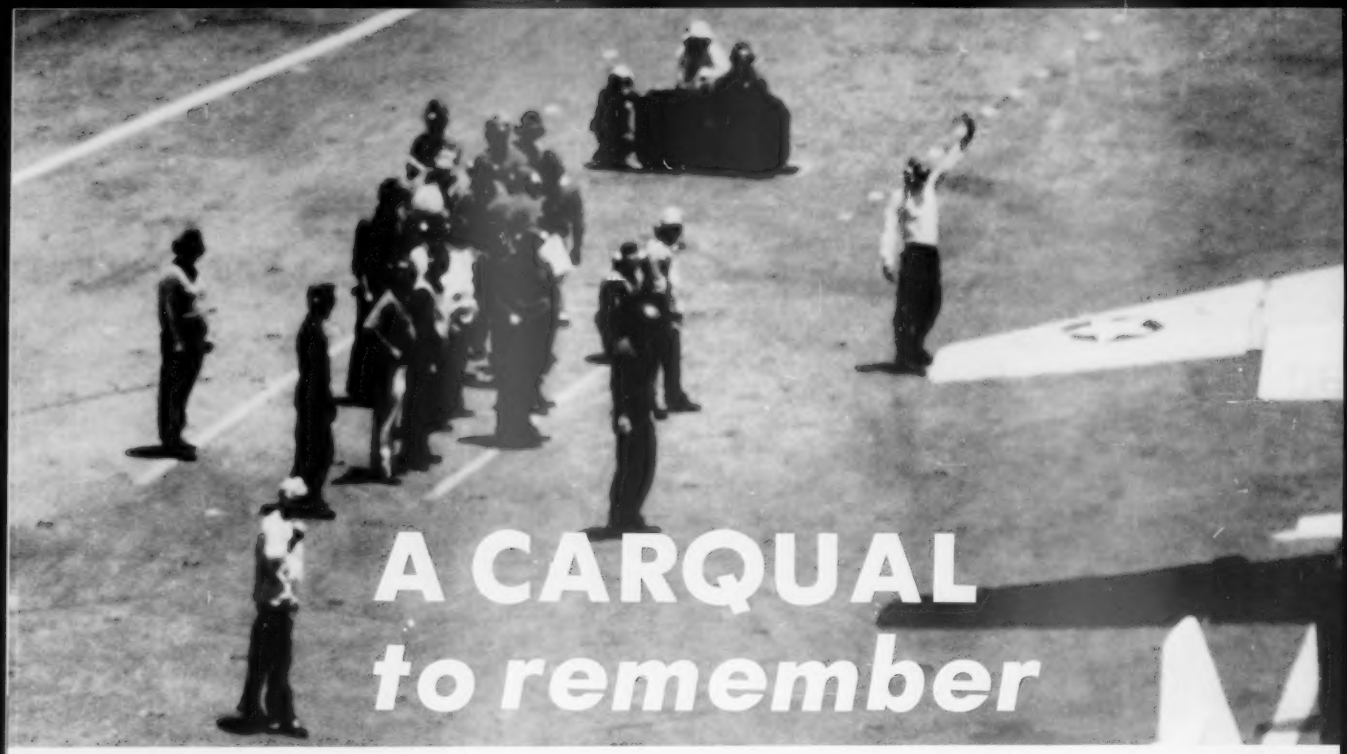
4. The steep approach idea is good only if you practice it and are comfortable with it. A slightly fast profile is probably as good an answer.

5. A strong copilot isn't a bad guy to have helping you in an emergency. They talk a lot but seem to say the right things.

6. It *CAN* happen to you.

Must run now to make my tee time reservations in Cubi. Will have one, possibly two, San Miguels for you.

Fondly,
BOB



A CARQUAL to remember

THE carrier was conducting routine day CARQUALs as the RP manned his A-7E for a hot seat turnaround. After his sixth uneventful arrestment, he pulled the throttle aft following runout and inadvertently retarded it to IDLE CUTOFF. He heard the engine unwinding, transmitted this to the tower, and returned the throttle to IDLE.

During engine winddown (approximately 43 percent RPM), the generator dropped off the line. Thinking that the engine had shut down, the RP secured the Inertial Measurement Set (IMS). He did not realize that the engine had not stopped but had returned to idle RPM. Believing that raw fuel was being dumped into a windmilling engine (throttle at IDLE), the pilot purposefully placed the throttle in IDLE CUTOFF, but again he heard the engine unwinding and quickly returned the throttle to IDLE. He then confirmed that the engine was running satisfactorily, reset the generator, and regained electrical power. He informed the tower and taxied clear of the landing area.

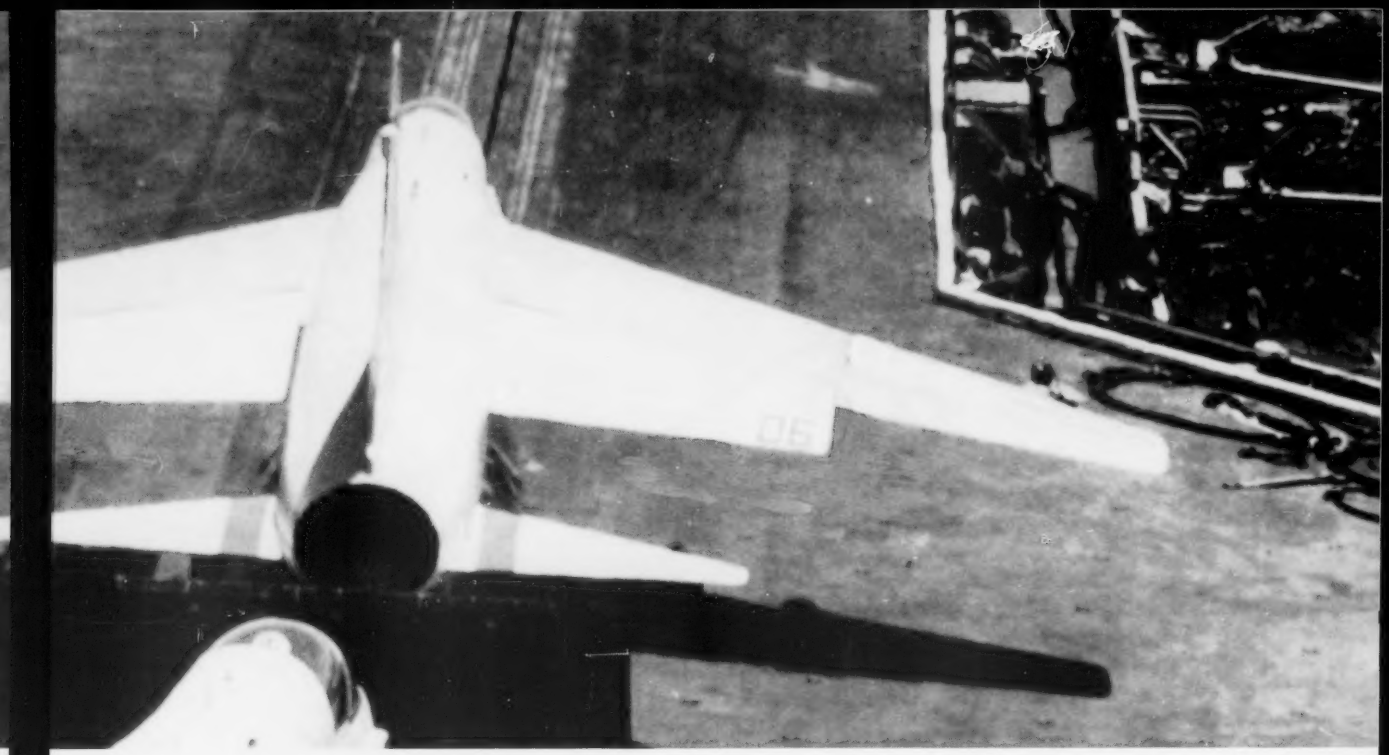
Because of the need to realign the IMS before launching, the A-7 was parked abeam the island. Squadron personnel in the tower transmitted to the pilot "Go to GRID (position on the IMS)" to obtain a coarse alignment. The aircraft had inoperable doppler radar so the RP knew that an airborne alignment was not possible. He prepared for the flyoff to Homeplate by slewing the IMS magnetic heading to what he thought was his approximate magnetic heading. He arrived at the estimated heading by adding 40 degrees (his angle off the bow to starboard) to the base recovery course (BRC) that existed when he trapped. He was reluctant to use magnetic heading from his standby magnetic (wet) compass due to proximity to the ship's island structure, nor was he aware that the ship's BRC had rotated counterclockwise to approximately 190 degrees in lieu of the 240 degrees he had set into the HSI.

With the magnetic heading unknowingly set in error by some 50 degrees, the RP reported that he was ready for launch. After failing to transmit his fuel state, he launched with 1,900 pounds and struck out on a northwesterly heading despite a bearing/distance call of 105/75 for Homeplate broadcast by the tower. Except for the offset heading, the pilot followed published NATOPS procedures for a Case I departure to 7,500 feet. During the climb he got a TACAN azimuth lock on Homeplate, bearing 015 degrees, and put the needle on the nose. At no time did the RP change the IMS mode selector from GRID position, nor was he able to obtain a TACAN DME readout.

The RP checked in with the CV's Departure Control at 7,500 feet, with 1,800 pounds of fuel, and doggedly maintained 105 degrees on the ADI/HSI, irrespective of the ever-increasing drift of the needle to starboard. The CV directed a channel shift to GCI control for inbound flight following. However, from this point on, the pilot was able to communicate with other facilities only by relay assistance from other squadron aircraft.

The next stumbling block for the young RP was the unexpected illumination of his MASTER CAUTION and LOW LEVEL fuel warning lights with a totalizer reading of 1,400 pounds. He immediately reduced power to maintain maximum range angle of attack and declared a low fuel state emergency via playmates in the area. There was no indication that the GCI facility was aware of the aircraft's low state or that two aircraft in the flyoff had been on an earlier launch and were squawking the same Mode III IFF frequency. GCI made a "positive" radar identification of the "other" A-7 in the flyoff and commenced giving vectors to a third A-7 for a rendezvous with No. 2, unaware of the fact that the first RP was low state and still did not know his true position.

During this time the incident A-7 thought he was under positive control and continued to steer 015 degrees on the ADI/HSI until he belatedly compared the magnetic compass heading of 330 with the HSI lubber line. After announcing this disparity in the blind to the controlling activity and to



his airborne playmates, he was advised by another RP to steer 015 on the magnetic compass. From this point on, he used only magnetic compass readings for directional reference, commencing with a 50-degree right turn to 015 degrees. The GCI facility continued to control the trailing A-7, attempting to rendezvous him with the No. 2 bingo aircraft (on the same Mode III squawk as No. 1). This continued for 5 minutes, with GCI unaware that the disoriented A-7 was not under their control until No. 3 joined No. 2 and announced the mistaken identity.

The errant RP, monitoring his playmates' transmissions, realized that his actual position was well to the west of his estimated position. He finally switched to emergency IFF, attempting to locate an emergency landing field, and commenced a climb to FL190. It had been 23 minutes since he departed the ship, 18 minutes since the LOW FUEL light had illuminated, and his fuel state was now 900 pounds!

The RP fixed his position visually as he recognized a landmark, and his emergency IFF was picked up by GCI. His position was 55 miles west of Homeplate. With the aid of his playmates, Approach Control, and his local charts, he located a field and commenced a steep, idle-power descent to set up an approach to the runway. He transitioned to the landing configuration 2 miles short of the threshold, but initiated his own waveoff due to excess speed crossing the numbers. He flew a very tight pattern and completed an uneventful landing after 33 minutes of flight. At shutdown 300 pounds of fuel was indicated on the main needle and zero fuel on the totalizer!

This incident did not result in a mishap, but many procedural errors occurred – any one of which could have caused or contributed to the loss of the aircraft.

- The aircraft radar was inoperative.
- Although suitable, the final landing field was not annotated on the pilot's divert chart as a suitable alternate, nor was it prebriefed as such.
- The UHF switching unit and the TACAN DME failed in flight.
- The pilot failed to follow prebriefed procedures for flight deck IMS alignment.
- The pilot failed to select Guard frequency at any time.
- The GCI facility failed to correctly identify the low fuel A-7 due to being uninformed of the identical Mode III IFF squawks preset into two other aircraft airborne at the same time.
- In the GRID mode of the A-7E INS, displayed ADI/HSI heading is a function of the slew control on the IMS control box. It is a noncomputer-controlled mode, and the IMS does not receive or utilize magnetic heading inputs from the ML-1 compass. Any heading error that exists as a result of pilot slew inputs will remain as long as the IMS remains in GRID.
- Both the Approach Control and GCI facilities usually scan an area that the incident aircraft never penetrated because of the pilot's navigational error. The initial magnetic heading of 50 degrees left of the intended track was responsible for this error.
- The ship failed to update the BRC before launching the aircraft to the beach.
- The pilot failed to request additional fuel prior to launch.

This incident brings to light many items which should be discussed by all units undergoing type refresher/work-ups as well as those undergoing initial CARQUALs. It behooves all support personnel and activities to provide maximum assistance during preflight briefing, covering such items as current BRC/weather/Bingo information, flight following, and NATOPS advisory information in case of aircraft system failures. The aircrewmen must be alert and responsive to changing operational situations and be prepared to make maximum use of all alternate systems available.

The CARQUAL scenario is a high-stress evolution for the aircrew, but if support activities SUPPORT, and pilots PILOT, then it can be made into a routine and safe evolution – every time!

For the NATOPS officer

By Maj V. L. McMinn

A CNO message (111418Z Jun 81) discussed compliance with duty-time limitations as established in OPNAV 3710 and in other SOPs: "WHILE IT IS UNDERSTANDABLE THAT EXTENUATING CIRCUMSTANCES OCCASIONALLY ARISE THAT MAY REQUIRE DEVIATIONS FROM SOPs, TRAINING SHOULD NOT BE ONE OF THEM. IT IS THE SQUADRON'S RESPONSIBILITY TO ENSURE THAT MISSIONS ARE SCHEDULED WITHIN SAFE OPERATING PARAMETERS WHICH INCLUDE ADHERENCE TO ESTABLISHED DUTY-TIME LIMITATIONS."

Seems like this policy, established at the highest level, would pretty much put the kibosh on pleading operational necessity in a training environment. Now let's discuss ways which might be used to get around this policy.

First Question: "Is a frag order, or TACTEST or a planned operation that takes place in NATO a *training* environment?" My opinion is that a distinction should be drawn by the chain of command between the training environment involving an instructor/student relationship (the pursuit of syllabus completion Xs) and the operational environment, which will consist of "commitments" levied on the squadron by the chain of command and by itself. The operational environment may involve syllabus completion (Xs) but only coincidental to completion of the assigned mission.

Second Question: "When does duty time start?" The 3710 addresses duty time in terms of "required awake" hours. As far as 3710 guidance is concerned, your duty time begins when your unit requires your waking presence somewhere and ends when you are no longer required to be awake, or 18 hours later, whichever comes first. This is a powerful argument for flexible working hours in a squadron, but unfortunately, the human body is not really that flexible. This is discussed in the Circadian Rhythm section of 3710. The 18-hour crew day has been routinely circumvented by allowing time for catnaps between sorties. Legalistically, no violation of regs exists. Realistically, fatigue has contributed to three pilot-involved mishaps since January 1980. One mishap occurred 45 hours after a mission began. The longest ground time available was 5 hours (shutdown to start-up).

Third Question: "Will CNO's message change anything on the squadron level?" I doubt it. We have become very adept at writing policy that retains or does not challenge the authority of the commanding officer. U.S. Navy regulations state that the responsibility of the commanding officer for the performance of his unit is absolute and that his authority is commensurate with his responsibility, also absolute. Does anyone see a built-in conflict between this deeply engrained concept of a commanding officer and the NATOPS program, which states in its letter of promulgation that it (the NATOPS program) is "not intended to stifle individual initiative, but rather, to *aid* the commanding officer . . . without reducing his command prestige or responsibility"? I pick no bones with the chain of command as long as the decisionmakers remember that authority comes as a result of responsibility and that, as far as standard managerial jargon goes, authority can be delegated but the responsibility for a decision must be retained by the person making the decision. Command has been characterized as being a lonely time for good reason. There is a lot at stake. ◄

The weather generates its own moderating influences. Follow the television weather forecasts and notice how every cold front is preceded by large masses of hot air.

Changing Times

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